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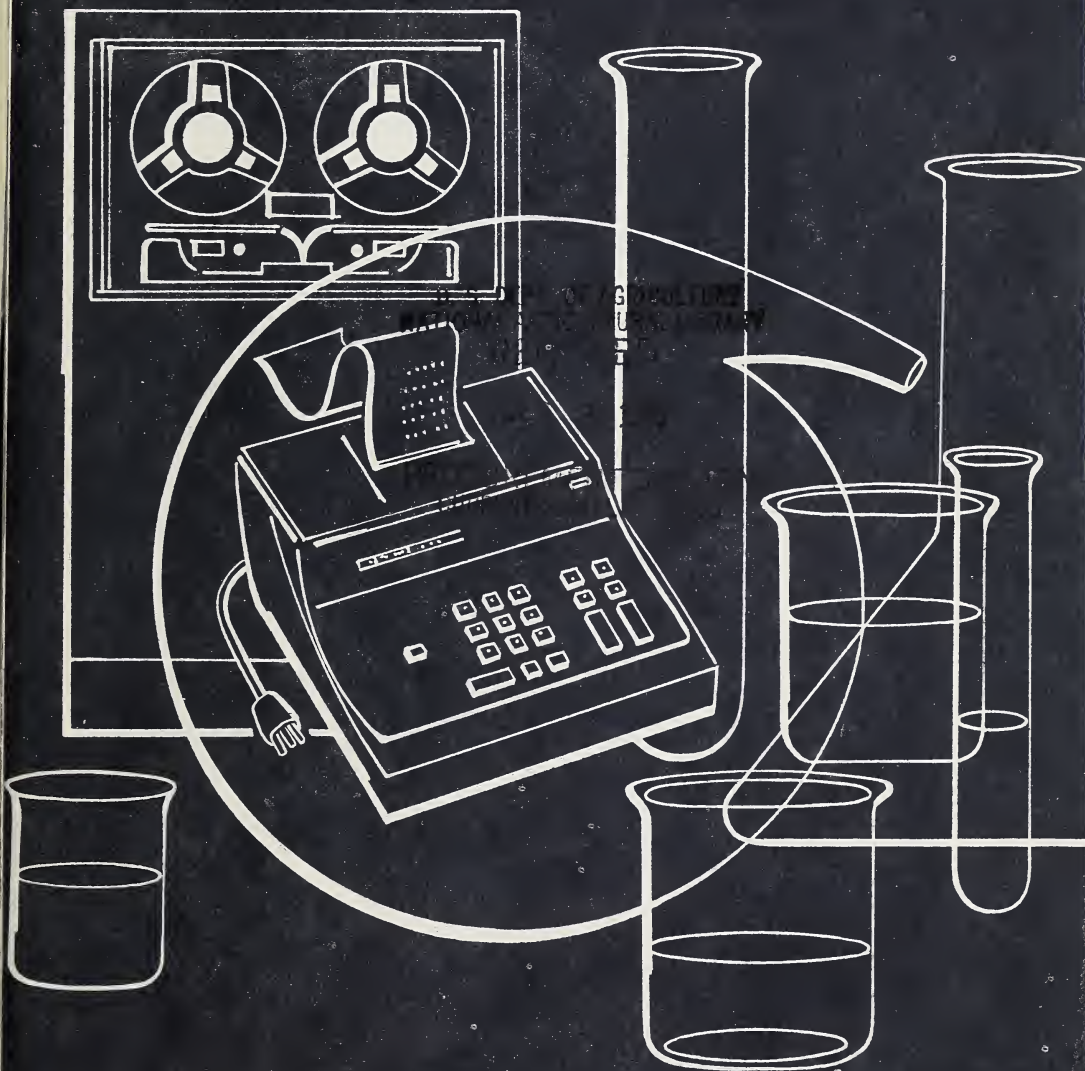
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cooperative research

PROGRESS
PROBLEMS



FCS RESEARCH REPORT NO. 26
FARMER COOPERATIVE SERVICE



U.S. DEPARTMENT OF AGRICULTURE

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HIGHLIGHTS

THIS study reports on the research activities of some of the 100 largest cooperatives in the United States. Fifty-five of the 80 cooperatives responding to a mail questionnaire provided information as to the nature and extent of their research programs.

Net volume of business of the cooperatives responding approximated \$11 billion, or about 58 percent of the annual business volume of all marketing, purchasing, and related service cooperatives. The 55 cooperatives reporting research, in turn, accounted for 45 percent of net annual volume of all cooperatives.

The makeup of the responding cooperatives was: Marketing, 59; supply, 14; diversified (marketing and supply) seven.

Thirty-four of the 55 cooperatives reporting research stated that they maintained formal business, technical, or combined business and technical research departments. These cooperatives reported 21 business research departments, 23 technical research departments, and four combined business and technical research departments. In addition, 28 cooperatives carried on informal business research in other departments. This compares with 23 carrying on technical research in other than technical research departments. Twenty-seven cooperatives reported contracting out some of their research (see pp. 6-8).

When the 34 cooperatives doing formal research were classified as to size, five reported an annual volume of business of less than \$50 million, nine between \$50 million and \$99 million, and 20 more than \$100 million. Expressed another way, about one-third of the cooperatives in the two smaller size classifications did research while nearly two-thirds in the largest size classification did.

Informal research operations were an important feature of research programs of these cooperatives. In 1972, the reporting cooperatives employed 203 professional people in business research—78 in formal research departments and 125 in informal efforts. During the same period, 309 professional persons were employed in technical research—184 in formal research departments and 125 in other research activities.

As of 1972, 28 cooperatives reported business research expenditures of \$3.1 million. This compares with 36 reporting technical research expenditures of \$7.4 million. During the past 5 years, business research increased about 140 percent, while technical research about doubled. Expenditures for technical research, however, were two and one-half times those for business research (see pp. 10-12).

Average research expenditures per cooperative maintaining formal research departments increased from \$47,000 to \$114,000 for business research from 1967 to 1972. During the same period, average technical research expenditures per association increased from \$146,000 to \$272,000.

Depending on the research programs of cooperatives, research directors spent a considerable amount of time advising other staff members. For instance, 22 research directors reported that they devoted 20 to 40 percent of their time to this activity and one-fourth reported that 60 percent or more of their time was spent in consultation with representatives of other departments.

In business research, particular attention was given to various aspects of farm supply distribution, farm product marketing, and such activities as planning, operations, and feasibility and facility studies (see pp. 14-17). Other areas were market potential, brand and market acceptance, foreign trade, mergers and acquisitions, and local cooperatives and member service.

Technical research devoted special emphasis to improving the quality of various production supply items. It also emphasized quality improvement in processing, and development of techniques for handling and storing the various products marketed. Areas receiving attention are feed improvement, petroleum products, fertilizer, fruits and vegetables, milk, grain, livestock, and facilities (see pp. 18-20).

Quality control also was an important related activity of cooperatives. In 1972, the 80 responding cooperatives reported the employment of 671 individuals and expenditures of about \$8.4 million for this function (see pp. 20-23).

Problems involved in establishing a research department center first of all on convincing management of the need for such a department and then a consideration of such factors as scope of activity, functions to perform, staffing, and methods of operation once a cooperative decides to establish an ongoing research program.

Once research is undertaken by cooperatives, it is important that they consider:

- Continually reexamining their research program;
- Developing effective techniques for coordinating research efforts;
- Improving day-to-day operations;
- Presenting findings effectively; and
- Identifying key responsibilities of management and research directors.

Research directors suggested that to improve the effectiveness of their programs it would be necessary to:

- Increase manager recognition;
- Achieve better coordination and communication with other staff, operating or line divisions, and departments;
- Increase budgets;
- Add more highly trained personnel; and
- Achieve better research management and improved laboratory and library facilities (these are special suggestions of technical research directors).

On the basis of the information presented, the following observations are advanced:

1. In many cooperatives, it may be necessary to bring business research into better balance with technical research. Cooperatives now devote only about 30 percent of their research budget to business research. The fact that many of them do not have well developed business research programs emphasizes the need for expansion.

2. Because cooperatives are organizations of people, it is important that they not only demonstrate a high degree of business efficiency, but also be alert to the needs and desires of their members. This suggests that many of them may want to give more attention to (a) exploring opportunities for gearing operations more closely to member needs, and (b) studying problems of improving the operating effectiveness of member associations. This has special application to federated regionals whose basic reason for existence is reflected in the effectiveness to which they are able to serve needs of member cooperatives.

3. The future of any cooperative research program is closely tied to how effectively management and research directors assume their responsibilities and are cognizant of the various factors that contribute to the success of the research function in cooperatives.

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cooperative research: PROGRESS, PROBLEMS

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Martin A. Abrahamsen¹, 1908 //

COOPERATIVE management has long recognized research as an important tool in decisionmaking. Just before the beginning of World War I, many cooperatives began using research findings of the U.S. Department of Agriculture (USDA) and land-grant universities for guidance in making policy decisions. Some 35 years ago, cooperatives began to explore the possibility of establishing their own business and technical research programs.

Recognizing the importance to cooperatives of developing their own research programs, Farmer Cooperative Service first studied these efforts in 1946.² This was followed in 1955 by a study of the business research practices of farm supply regionals.³

Webster's new international dictionary interprets research as "a careful and critical inquiry or examination in seeking facts and principles; a diligent investigation in order to ascertain something." The Encyclopedia of Social Science defines research as "the manipulation of things, concepts, or symbols for the purpose of generalizing

¹Dr. Abrahamsen, formerly Deputy Administrator, Farmer Cooperative Service, retired in June 1973. He expresses appreciation for suggestions and assistance to J. Warren Mather, senior agricultural economist, farm supplies, Farmer Cooperative Service, USDA.

²Abrahamsen, Martin A., *Research Practices and Problems of Farmers' Regional Associations*, FCA Miscellaneous Report No. 96, February 1946. Available in libraries.

³Abrahamsen, Martin A., *Business Research of Regional Farm Supply Co-ops*, FCS General Report 13, February 1955. Available in libraries.

to expand, connect, or verify knowledge.” Implied in these definitions is the necessity of using tested and approved research techniques to distinguish between research and causal observation.

Research involves classifying findings, identifying interrelationships and alternatives, and drawing conclusions. As considered in this and previous FCS reports, cooperative research has been classified into two types—business and technical.

Business research includes what is commonly referred to in one or more of such terms as economic, market, operations, and financial research. It also may include planning and sociology (human relationships), involving members, employees, directors, and the general public, and legal and tax inquiries.

Technical research relates primarily to product development. It includes various aspects of processing farm products and quite generally is concerned with laboratory experimentation and analysis. It often encompasses aspects of production involving experimental or field tests to develop improved crop varieties, better use of fertilizers, and superior feeds.

OBJECTIVES AND PROCEDURE

The basic objectives of this study were to:

1. Determine the nature and extent of cooperative research programs.
2. Suggest points for cooperative leaders to consider in establishing new research programs or in the further development of existing programs.

To assemble this information, a questionnaire was developed and sent to the managers of each of the 100 largest cooperatives in the United States; size was based on volume of business reported for their fiscal year ending in 1970.

In addition, detailed consultations were held with research directors and their staffs at six regional associations. They represented cooperatives that had maintained active research departments for 15 years or more. In some instances, it also was possible to interview division or department representatives who used the findings of these research departments. Information was obtained on the type of research conducted; the organization and operation of their research programs; identification of the most useful research undertaken; research completed during the past fiscal year; staffing,

with emphasis on relationships with operating or line departments or divisions; quality control; and operating budgets.

Information was obtained from 80 cooperatives of which 55 conducted research of some kind and 25 reported doing no research of any kind. Of the 20 associations not responding, knowledge of their operations by the FCS staff indicates that most of them are not actively engaged in research.

For purposes of analyses, cooperatives were grouped in three categories—type, size, and structure. Marketing, supply, and diversified (supply and marketing) cooperatives comprised the type classifications. To be classified as marketing or supply cooperatives, cooperatives had to report at least two-thirds of their business in these types of activity. Diversified cooperatives, in contrast, reported more than one-third of their annual volume of business in each of the marketing and supply categories.

Of the 100 cooperatives sent questionnaires, 75 were classified as marketing, 17 as supply, and eight as diversified. Marketing cooperatives, in turn, were classified as follows: Dairy, 23, grain, 13; fruits and vegetables, 13; livestock, nine; and other, 17 (table 1).

The 100 cooperatives reported nearly \$13 billion worth of net annual business, or about 65 percent of the total net annual business of all U.S. agricultural cooperatives.

The 80 cooperatives answering the questionnaire included 59 marketing associations, 14 supply associations, and seven diversified associations. Their total annual volume of business (about \$11 billion), represented 85 percent of the business of the largest cooperatives, or approximately 58 percent of the volume of business of all U.S. agricultural cooperatives (table 1).

Cooperatives reporting on their research efforts also were compared by size. They were grouped in three classifications—under \$50 million, \$50 million to \$99 million, and \$100 million and over. The latter classification included 33 of the 80 responding cooperatives and accounted for about 75 percent of their business volume. The \$50 million to \$99 million size classification included 32 of the 80 respondents, and accounted for 21 percent of their business volume.

The structure category also was made up of three classes—federated, centralized, and mixed. Federated and centralized cooperatives were about evenly divided as to number of cooperatives and net volume of business for both the 100 largest and the respondents. There were 43 and 46 in the respective groups, each accounting for about 40 percent of net volume of business of these groups. Those having a

Table 1—Number of cooperatives and volume of business for the 100 largest cooperatives and the cooperatives responding, by type, size, and structure of association, 1970

Item	100 largest cooperatives		Cooperatives responding	
	Cooperatives	Annual volume	Cooperatives	Annual volume
	<i>No.</i>	<i>Mil. dol.</i>	<i>No.</i>	<i>Mil. dol.</i>
Type:				
Marketing:				
Dairy	23	3,499	21	3,341
Grain	13	2,011	7	932
Fruit & vegetables	13	1,085	10	908
Livestock	9	1,301	9	1,301
Other	17	1,617	12	1,422
Total	75	9,513	59	7,904
Supply:	17	2,601	14	2,330
Diversified	8	821	7	784
Total	100	12,935	80	11,018
Size:				
Under \$50 million	20	774	15	592
\$50 million-\$99 million	41	2,867	32	2,317
\$100 million and over	39	9,294	33	8,109
Total	100	12,935	80	11,018
Structure:				
Federated	43	5,981	30	4,405
Centralized	46	5,196	39	4,855
Mixed	11	1,758	11	1,758
Total	100	12,935	80	11,018

mixed federated-centralized structure accounted for 11 percent of numbers and nearly 16 percent of the annual net volume of business of the 100 largest cooperatives.

When compared with the 100 largest cooperatives, the number of respondents and their annual volume of business, classified according to type, size, and structure were:

Item comparisons	Responding cooperatives as a proportion of 100 largest	
	Number	Annual business
<i>Percent</i>		
Type:		
Marketing	79	83
Supply	82	94
Diversified	88	93
Total	80	85
Size:		
Under \$50 million	75	76
\$50 million-\$99 million	78	81
\$100 million and over	85	87
Total	80	85
Structure:		
Federated	70	74
Centralized	85	93
Mixed	100	100
Total	80	85

Among the marketing cooperatives, the dairy and livestock associations had the highest proportion of respondents—87 percent and 100 percent, respectively. Only about half of the grain and three-fourths of the fruit and vegetable cooperatives responded.

RESEARCH OPERATIONS

This section considers the nature and extent of cooperative research, how cooperatives have tooled up to do research, and the kinds of research they do.

Time of Initiating Research

As would be expected, the larger cooperatives were the first to initiate formal research programs. Nine of those starting research before 1950 were in the current \$100 million and over size classification.

Periods during which research was initiated as reported by 42 cooperatives were:

Period	Cooperatives
	<i>Number</i>
1940 and before	8
1941-50	8
1951-60	9
After 1960	19
Total	42

Extent of Formal Research Activities

The extent to which the responding cooperatives engaged in various types of research activity is shown in table 2. Of the cooperatives reporting formal research departments, 23 had technical research departments, 21 had business research departments, and four maintained combined business and technical research departments. Since many cooperatives had both technical and business research departments, the total number of cooperatives reporting formal research departments was only 34. Supply cooperatives and those in the \$100 million size classification reported the largest proportion of cooperatives having formal research departments.

Of the 34 responding cooperatives 20 that were in the \$100 million and over classification reported formal research departments. Seventeen of those cooperatives had business research and 10 had technical research. By comparison, of the 32 cooperatives responding in the \$50 million to \$99 million size classification, nine reported research departments—all had technical research, but only three had business research. Of the 15 cooperatives in the under \$50 million size classification, five reported formal research departments—four were technical and one was business research.

Table 2—Number of cooperatives according to type of research department, by type, size, and structure of association, 1972

Item	Type of research department			Cooperatives reporting	
	Business	Technical	Combined	Research ¹ departments	No formal research departments
<i>Number</i>					
Type:					
Marketing:					
Dairy	5	5	1	7	14
Grain	0	1	0	1	6
Fruits & vgs.	4	7	1	8	2
Livestock	0	1	0	1	8
Other	4	4	0	6	6
Total	13	18	2	23	36
Supply	6	4	1	9	5
Diversified	2	1	1	2	5
Total	21	23	4	34	46
Size:					
Under \$50 million	1	4	1	5	10
\$50-\$99 million	3	9	1	9	23
\$100 million and up	17	10	2	20	13
Total	21	23	4	34	46
Structure:					
Federated	6	10	1	8	23
Centralized	12	10	2	20	19
Mixed	3	3	1	6	5
Total	21	23	4	34	46

¹Totals are not additive since many cooperatives report both business and technical research.

Informal Research Activities

Table 3, in addition to providing information on the extent which cooperatives in the various size classifications do formal research, also furnishes data on informal research efforts. This includes the number of cooperatives conducting business and technical research in various other departments or divisions of their organization as well as those reporting that all research was contracted out.

As for business research, nine of the 21 cooperatives having formal research departments also reported they conducted such research in other departments or divisions. In addition, 19 reported that the only business research they carried on was in other departments or divisions.

Of the 23 cooperatives reporting technical research departments, five reported that they also conducted technical research in other departments or divisions, and 22 reported that such research was conducted only in such departments or divisions.

A total of 27 cooperatives contracted out research. This included 24 that also reported other research and three that reported only contract research.

Advisory Assistance

There is wide variation in the proportion of time cooperative research directors devoted to advising directors and other employees of line departments and divisions. The time given to such advisory assistance quite likely reflects the philosophy of research that prevails in individual cooperatives. When much of the research function is centered in operational departments, the time devoted to advisory assistance is substantially higher than in the established, larger research departments. As a result the research director may make substantial contributions to the quality of research in operational departments. In these cooperatives, the research man often can call on divisions and departments to provide personnel to help study various problems that may arise. The reverse is true when major research is centered in line departments or divisions.

Table 3—Distribution of cooperatives according to type of research effort, by annual volume of business, 1972

Type of research	Total	Under \$50 million	\$50 million to \$100 million	\$100 million and over
<i>Number</i>				
Formal research departments:				
Business & technical combined	4	1	1	2
Business only	21	1	3	17
Technical only	23	4	9	10
Total ¹	34	5	9	20
Business research in other divisions or departments:				
Also having business research department	9	0	2	7
Not having business research department	19	5	10	4
Total	28	5	12	11
Technical research in line divisions or departments:				
Also having technical research department	5	1	1	3
Not having technical research department	18	3	6	9
Total	23	4	7	12
Research contracted out ²	27	2	9	16

¹Many cooperatives reported more than one type of research activity.

²Federal Government, universities, consulting firms, and other.

The percent of their time devoted to advising line departments and divisions was reported by 46 research directors as follows:

Percent of time	Research directors
	<i>Number</i>
19.9 or less	6
20-39.9	22
40-59.9	7
60 and over	11
Total	46

Expenditures for Research

Table 4 shows expenditures by cooperatives for various types of research. Expenditures for business research increased about 140 percent and for technical expenditures just over 100 percent from fiscal years ending between July 1, 1966, and June 30, 1967, and fiscal years ending between July 1, 1971, and June 30, 1972.

Total research expenditures by cooperatives during the latter period are less than 0.001 percent of sales, or substantially less than the research expenditures reported for other segments of the economy. For both types of research, expenditures increased from \$4.9 million to about \$10.5 million during the 5-year period. Business accounted for slightly more than 25 percent of total research expenditures in the first period and about 30 percent in the later period.

By far the greatest expenditures were for staff and related items. While total expenditures increased substantially during the 5-year period, allocation of funds by research activity has not changed appreciably. Table 4 also shows that contracts with various types of commercial firms are of more importance in business research than in technical research. Grants to universities increased from 4 to 7 percent of total expenditures for business research while for technical research this item declined from 10 to 6 percent.

Further indication of trends and research expenditures is found by examination of data reported in prior FCS studies. In 1955, estimated expenditures for five cooperatives maintaining business research establishments at that time was about \$150,000. By 1972, these five cooperatives reported business research expenditures of \$530,000, a 280 percent increase. Incidentally, these same five

Table 4—Cooperative expenditures for research, by type of research

Type of research	Expenditures during business year that ended between					
	July 1, 1971 and June 30, 1972			July 1, 1966 and June 30, 1967		
	Co-ops.	Amount		Co-ops.	Amount	
	<i>No.</i>	<i>1,000 dol.</i>	<i>Pct.</i>	<i>No.</i>	<i>1,000 dol.</i>	<i>Pct.</i>
Business:						
With own staff	28	1,936	63	21	902	70
Jointly with other cooperatives	3	70	2	1	5	--
Grants to universities	7	204	7	6	45	4
Grants to Federal Government	1	2	0	0	0	0
Contracts with commercial firms	11	847	28	11	337	26
Total	28	3,059	100	23	1,289	100
Technical:						
With own staff	32	6,491	87	23	3,073	85
Jointly with other cooperatives	6	398	5	4	97	3
Grants to universities	16	408	6	11	364	10
Grants to Federal Government	3	50	1	3	24	1
Contracts with commercial firms	7	80	1	3	43	1
Total	36	7,427	100	27	3,601	100
Total	--	10,486	--	--	4,890	--

-- Not additive.

associations reported technical research expenditures of \$1.2 million in 1972. For the fiscal year ending June 30, 1967, these same five cooperatives reported business research expenditures of about \$350,000 and technical research expenditures of \$755,000. Thus, increases during the past 5 years have been about 50 percent.

Number of Employees

Substantial growth has occurred in the number of persons, both professional and other, who were employed in cooperative research during the past 5 years. The number of professional employees has increased approximately 70 percent for business research and 60 percent for technical research. Other employees increased 60 percent in business research compared with approximately 85 percent in technical research during the same period.

From the standpoint of professional staffing, it is obvious that appreciably more effort is being directed to technical research than to business research. More than twice as many professional persons were employed in such research in both 1972 and 1967. The relationship is even more pronounced among other employees—those in business research accounted for only about 20 percent of the total number of persons employed in each period.

The number of professional and other employees of research departments reported by cooperatives in 1972 and 1967 was:

Year and type of research	Type of employee			
	Professional		Other	
	Business	Technical	Business	Technical
<i>Number of employees</i>				
Type of research-1972:				
Business and technical	9	38	5	44
Business	69	--	33	--
Technical	--	146	--	153
Total	78	184	38	197
Type of research-1967:				
Business and technical	5	22	1	14
Business	42	--	23	--
Technical	--	93	--	92
Total	45	115	24	106

Cooperatives also reported the number of full-time and part-time employees engaged in business research in other staff, line, or operating departments or divisions. This number was:

Department	Employees	
	Full-time	Part-time
	<i>Number</i>	
General administration	56	3
General marketing	21	1
Commodity marketing	15	3
Feed	11	--
Farm chemicals	5	2
Distribution	1	5
Planning	3	1
Engineering	3	--
Miscellaneous	3	1
Total	110	15

These data indicate that more manpower is directed to business research in other staff, line, or operating departments or divisions than in formal business research departments. Greatest effort is in general administration, general marketing, commodity marketing, and feed departments. The number of full-time researchers is about 50 percent greater than the number of professional researchers in formal business research departments.

The number of workers engaged in technical research in line or operating departments was:

Department	Full-time employees
	<i>Number</i>
General administration	46
Forage and feed	16
Plant foods	12
Seeds	7
Petroleum	2
General farm supplies	8
Dairy	12
Other marketing	9
Miscellaneous	13
Total	125

This number is about 65 percent of the number of professional employees reported in formal technical research departments. This suggests that a greater proportion of technical research is done in formal research departments than is the case with business research. This may be because by its very nature technical research requires greater specialized training and more formalized procedures.

Types of Business Research

Cooperatives were asked to list the 10 most important business research studies completed during the past year and to identify the three studies management found most useful in making decisions. A total of 36 associations provided information. In reporting the 10 most important studies completed during the year, 188 were listed. Ninety-eight studies were listed when reporting the three most important to management in reaching business decisions. Classified according to such types of research, the number of studies reported was:

Type of research	Ten most important studies reported	Three studies most useful to management
<i>Number</i>		
Distribution of farm supplies:		
General	9	3
Product	20	10
Market potential	6	3
Total	35	16
Marketing of farm products:		
General	8	8
Commodities	18	7
Brand and market acceptance	10	4
Foreign trade	6	1
Total	44	20
Planning	12	7
Operations	32	24
Feasibility and facility	33	22
Processing	2	0
Mergers and acquisitions	7	3
Local cooperatives and member service	9	1
General economic	4	2
Miscellaneous	10	3
Total	188	98

Obvious problems arose in classifying the research activities of cooperatives. Not all studies were mutually exclusive. Differences in the use of terminology also made classification difficult. Notwithstanding these problems, it seems that the information reported will be helpful in identifying the basic areas of business research conducted by cooperatives.

In the preceding tabulation, the term "distribution" is restricted to the farm supply function. Distribution of farm supplies, for instance, relates to broad studies that have across-the board application. General distribution included distribution of supplies through local affiliates or dealer agents, yearly sales analysis and projections, and organization of physical distribution systems.

Product distribution studies have given major emphasis to such production supplies as petroleum and related items, fertilizer, feed, farm chemicals, animal health, and related items. The term "market potential" is used to describe studies covering the proportion of any given production supply item that a cooperative provides in a given area. It also usually involves evaluating the potential that exists for its distribution.

Comments made with regard to general and product distribution research also apply to general and commodity marketing research. In addition, cooperatives emphasized two other areas of market research—brand and market acceptance and prospects for developing foreign markets.

Operations studies covered a wide range of activities, including overall and department or division operating efficiencies. Also included in this classification are studies concerned with the cooperative's image, functioning of its field staff, pooling operations, effectiveness of cooperative media, and advertising and promotional programs.

Feasibility and facility research were combined, because in many instances, feasibility studies related to the desirability of adding a new facility or determining its location, or to the merits of expanding or discontinuing certain operations. Other feasibility studies related to the desirability of handling new items or providing various related services.

General economic studies emphasized an evaluation of basic economic and political developments and what they might mean in the individual operations of the cooperative.

Some of the problems of classification of research also are indicated by the processing classification. While only three cooperatives emphasized processing as such, it is obvious that many of the feasibility and facility studies also might involve processing or

manufacturing. The same is true of certain of the commodities and product studies classified under marketing and distribution.

Comparison of the 10 most important studies with the three most useful to management in decisionmaking indicates a close relationship between both types. Management, however, did place special emphasis on general marketing, operations, and feasibility and facility studies. In contrast, management gave relatively less attention to foreign trade and local cooperative and member service.

As indicated previously, some of the business research conducted by cooperatives is carried on in other departments. Information as to the departments in which such research was conducted was provided by 27 cooperatives. The nature and extent of such research is indicated by the number of cooperatives reporting full-time and part-time employees, classified according to departments:

Department	One or more full-time research employees	Part-time research employees only
<i>Number of cooperatives</i>		
General administration	19	3
General marketing	9	1
Commodity marketing	8	3
Feed	3	--
Farm chemicals	3	4
Distribution	1	6
Planning	2	--
Engineering	2	--
Miscellaneous	3	1

Most of the research was conducted in general administrative, general marketing, and commodity marketing departments. Feeds and farm chemicals were the most active farm supply departments in conducting supporting business research.

Type of business research conducted by other than the research departments of these cooperatives were:

Type of research	Cooperatives reporting
	<i>Number</i>
Operating efficiency	10
Facility and feasibility	10
Marketing farm products	8
Distribution of farm supplies	7
Forecasting and market potential	7
Financial analyses	6
Advertising effectiveness	3
Miscellaneous	8

This research is somewhat more restricted in scope than that carried on by the research departments. More so than in formal research departments, emphasis was on studies relating to operations, facilities and feasibility, marketing of farm products, forecasting and market potentials, distribution of farm supplies, and financial analyses. In general, this research is somewhat more specific and limited in scope and relates to the immediate problems of concern to the various departments conducting the research.

Cooperatives conducting business research in other than business research departments were also asked to indicate other sources of information used by management to obtain necessary business facts and information for making important decisions. These were:

Source of information	Cooperatives reporting
	<i>Number</i>
Own operations	14
Consulting firms	14
Universities and State agencies	11
Federal agencies	10
Trade associations, libraries, and periodicals	10
Suppliers	4
Other	3

This summary indicates that five sources of information are particularly important in providing a basis for making managerial decisions. These are internal operations; contracts with consulting firms; universities and State agencies; Federal agencies; and trade associations, periodicals, and libraries. To a lesser extent, suppliers also were looked to for information.

Types of Technical Research

Cooperatives were asked to indicate five important technical research studies completed during the year and to identify the three which were most useful to management in making policy decisions. Classified according to areas of research, the number of times cooperatives reported research in these classifications was:

Areas of research	Cooperatives reporting	
	Five most important studies	Three studies of greatest use to mgt.
<i>Number</i>		
Farm supplies:		
Feed improvement	20	7
Petroleum products	10	10
Fertilizer	6	5
General supplies	3	2
Total	39	24
Farm products:		
Fruits and vegetables	30	13
Milk	14	15
Grain (including rice)	8	4
Livestock	7	-
Sugar	4	3
Corn	3	3
Total	66	38
Other:		
Facilities	7	7
Pollution control	2	2
Miscellaneous	6	7
Total	15	16
Total-all areas	120	78

These studies, to an appreciable extent, emphasized product development. Problems studied varied from processing techniques and facilities to gain market acceptance. In some instances, research extended back to farm production studies and to experiments relating to either the development of strains and varieties to experimentation in the use of various production supplies and services.

A close relationship prevailed between the five listed studies and the studies considered most important in helping management arrive at better policy decisions. In all, 29 cooperatives reported some 120 studies and of this number, some 78 that were labeled as especially important in arriving at policy decisions. Except for a somewhat smaller proportion of studies relating to feed improvement, fruit and vegetables, and grain and rice, the numbers reported in the two classifications quite closely paralleled each other.

Cooperatives conducting technical research in other than technical research departments also reported the departments in which such research was conducted. Nineteen cooperatives reported as follows:

Department	Cooperatives reporting
	<i>Number</i>
General administration	11
Feed and forage	6
Plant foods	7
Seeds	2
Petroleum	2
General farm supplies	4
Dairy	6
Other marketing	2
Miscellaneous	3

The comparative importance of the various departments conducting technical research is indicated by the number of employees in each engaged in such research. These were general administration, feed and forage, plant foods, and dairy (see p. 13).

Areas of technical research conducted in these departments were:

Areas of research	Cooperatives reporting
	<i>Number</i>
General supplies	7
Feed and forage	6
Plant foods	4
Seeds	3
Pesticides	2
Equipment evaluation	3
Cotton	2
Poultry	2
Other	4

These data show that special emphasis was on farm supply items. In addition to general farm supply distribution research, feed and forage, plant foods, seeds, pesticides, and equipment evaluation were important areas of investigation. Special emphasis often was on the development of new varieties or new processes and techniques for the production, manufacturing, or handling of various types of production supplies. Some cooperatives studied the evaluation of equipment used by farmers in distributing or handling farm supplies.

Cooperatives reporting technical research in other departments were asked to report on other sources of information useful to management. As reported by 25 cooperatives, these were:

Source of information	Cooperatives reporting
	<i>Number</i>
Universities	17
Trade associations	12
Other cooperatives	10
Suppliers	9
USDA	8
Consultants	8
Internal operations	4
Other	3

Sources reported in general were much the same as those reported by cooperatives maintaining technical research committees. The more important of these were universities, USDA, trade associations, other cooperatives, suppliers, and consultants.

QUALITY CONTROL

Indirectly related to the research programs of cooperatives are their quality control operations. Information on expenditures and employees in these operations is given in table 5 for cooperatives classified according to type and size.

These data show that quality control expenditures have increased from about \$4.7 million to \$8.4 million during the 5-year period. A very large share of all of these expenditures was for associations having net annual volumes of business of \$50 million or more. Also during the 5-year period, quality control expenditures of marketing

Table 5—Average research expenditures per cooperative for those associations with formal research departments

Type of research	Average expenditures during business year that ended between:			
	July 1, 1971 and June 30, 1972		July 1, 1966 and June 30, 1967	
	Amount		Amount	
	<i>1,000 dol.</i>	<i>Pct.</i>	<i>1,000 dol.</i>	<i>Pct.</i>
Business (21 cooperatives)				
With own staff	66	58	31	66
Jointly with other cooperatives	2	2	--	--
Grants to universities	10	9	4	8
Grants to Federal Government	--	--	--	--
Contracts with commercial firms	36	31	12	26
Total	114	100	47	100
Technical (23 cooperatives)				
With own staff	238	88	126	86
Jointly with other cooperatives	17	6	4	3
Grants to universities	14	5	15	10
Grants to Federal Government	--	--	--	--
Contracts with commercial firms	3	1	1	1
Total	272	100	146	100
Total	658	--	339	--

cooperatives increased approximately 120 percent; for supply cooperatives, the increase was about 30 percent (table 6). There is reason to believe that the marked increase reflects increased emphasis on quality control as more of the marketing associations have moved into processing.

Most regional cooperatives report maintaining their own quality control staffs and laboratory facilities, although in some cases they use outside firms for some or all of their quality control work. As a general rule, quality control relates to incoming and outgoing materials. It also covers products at various stages that go through processing or manufacturing lines.

Among the types of tests conducted:

- Feeds are tested in and out of mills for specifications, protein, fat, fiber, vitamins, drugs, medications, pesticide residue, and moisture content.

- Fertilizer ingredients and finished products are checked for NPK (nitrogen, phosphate, and potash), coating agents, and moisture content.

- Seeds are tested for purity, germination, weed content, and trueness to type.

Table 6—Expenditures for and number of employees engaged in quality control as reported by 33 cooperatives, by type and size

Type and size of cooperative	July 1, '71-June 30, '72		July 1, '66-July 30, '67	
	Employees	Expenditures	Employees	Expenditures
	<i>Number</i>	<i>1,000 dollars</i>	<i>Number</i>	<i>1,000 dollars</i>
Type:				
Marketing	429	5,371	232	2,417
Supply	220	2,705	197	2,116
Diversified	22	278	18	156
Total	671	8,354	447	4,689
Size:				
Under \$50 million	65	456	49	285
\$50-\$99 million	169	2,354	106	1,128
\$100 million & over	437	5,544	292	3,276
Total	671	8,354	447	4,689

- General farm supplies, petroleum products, paints, steel structures, and related items are tested for a wide range of product characteristics and specifications.

- Manufactured and processed dairy products are inspected and tested for butterfat, solids nonfat, and farm inspection; quality maintenance is checked and specifications for nondairy ingredients are checked. Attention also is given to microbiological and chemical tests relating to all products.

- Grain products tests give special attention to milling qualities, blending for special baking uses, texture, moisture content, protein content, fats, fiber, ash, microbiological data, and purity.

- Fruits and vegetables are tested for pesticide residue, physical defects, and various bacteriological, microbiological, and related specifications. Attention also is given to packaging, weight control, and quality maintenance.

This summarization tabulates some of the main areas that are emphasized in the wide range of cooperative quality control programs. Farm supply cooperatives, generally emphasize providing the quality of products best suited to meeting the growing and changing needs of members. Marketing cooperatives feature quality maintenance to the end that cooperatives, through meeting consumer and marketing preferences, have an opportunity to maintain existing markets and build new outlets for established and new products.

ESTABLISHING A RESEARCH DEPARTMENT

Two considerations are basic in establishing an effective research department: (1) convincing management of the need for research, and (2) steps to take in setting up a research department once management decides to establish one.

Convincing Management of Need for Research Department

Only when it recognizes the benefits to be derived from a well functioning research department and is willing to support and encourage such a department is cooperative management serious about research. (Management is here used to include the manager, key employees, and directors.) While management support and encouragement for cooperative research has increased substantially in

the past quarter of a century, it still lags behind that of most other agribusiness firms. To some extent, this may be due to the reliance management has placed on the research of State and Federal agencies. It also may reflect inadequate appreciation of just how research can help provide basic information needed in reaching better decisions on a wide range of operating problems.

In some instances, it is difficult to convince management of the merits of establishing a research program because it is hard to measure the contributions research can make. The costs of operating a research department or conducting a research study are quite specific and obvious. What is not so specific and obvious are the benefits from having better information on which to decide the merits of a proposal. These often are quite intangible and difficult to recognize.

Management may tend to look on a \$50,000 budget for initiating research as just an added expense—a questionable addition to overhead. In reality, the study may provide basic information that will enable management to make the best decision when deciding whether or not to undertake a project. A better basis for reaching a *no* decision, for example, may save members many times \$50,000, if it discourages undertaking an unsound project. In contrast, specific information leading to reaching a *yes* decision may result in benefits for members amounting to many times the costs involved. Arriving at a better answer in evaluating just one proposed undertaking could cover all annual costs of operating a research department.

Management may find it useful to review the many ways in which cooperatives presently are using research when considering the feasibility of establishing a research department (pp. 14-20). One of the first regional farm supply cooperatives to establish a business research department now budgets \$300,000 yearly for this department, indicating the confidence that its management has in the research function. (Further information on kinds of business research that cooperative management has expressed an interest in is described in more detail in *Business Research of Regional Farm Supply Cooperatives*, FCS General Report 13, pp. 9-12.)

Management also needs to be continually aware that cooperatives are organizations of people. The contributions that research can make in dealing with the various human relationships that are unique among cooperatives is not always fully recognized. For example, research can be an effective tool in determining what the needs and interests of members are as well as the extent and degree to which they are ready to support new cooperative ventures.

In some instances, the problem of convincing management of the need for research can be traced to poor performance or inability to effectively sell their programs on the part of research directors. The professional ability of the research staff is involved. The responsibility for selecting a research director who by training and experience is able to give competent direction to program activities, of course, rests with management. How well it does this reflects its understanding of the research function. On the other hand, the responsibility for effectively selling research findings and in communicating these findings to management rests with the research director.

The question may well arise—when is a cooperative ready to undertake research? Obviously, this varies with commodities handled, services performed, personnel available, relationships with other cooperatives and research agencies, and special problems that may confront any given cooperative. While a local cooperative doing \$3 to \$5 million worth of business annually no doubt is too small to have a formal research department, it may not be too small to have someone assigned, at least part-time, to be responsible for being constantly on the alert to determine how research can be helpful in dealing with the critical problems confronting it. Such an individual can do much to develop liaison research relationships with land-grant universities and regional cooperatives with which the local is affiliated. Moreover, from time to time, and with proper guidance, he may be able to do research on such practical problems as member and public relations, efficiency of operation, and market potential. Perhaps one of the greatest contributions of such an individual would be to develop a research consciousness among the manager, key employees, and directors. This could be extremely helpful in identifying researchable problems and then in knowing when, where, and how to seek the best answers to these problems before irrevocable decisions are made.

As associations get bigger (\$25 million to \$50 million worth of annual business), depending on the qualifying considerations previously identified, they may be ready to consider the employment of a full-time employee to do business, technical, or combined business and technical research. After all, a \$50,000 expenditure for research by a cooperative doing \$25 million worth of business annually is only 1/5 of one percent of total sales. The questions management must decide are: Under the specific conditions confronting it, what benefits would its members most likely realize from such an expenditure? and, What might be the costs or losses if such an expenditure is not made?

Setting Up A Research Department

Once management is convinced that a research department should be established, a number of practical questions arise. One relates to deciding on the scope of research activity. Depending on the nature of cooperative effort, the first question to consider may well be: Should research emphasize business or industrial programs, or both? Some cooperatives have found that the establishment of a research advisory committee is helpful in setting up priorities and in determining the nature and direction of a research program and the overall emphasis that should be put on such a program.

Experience has demonstrated that cooperatives should emphasize research on their internal and specific operating problems. For example, this may involve some cooperatives in determining if research should be directed toward the feasibility of developing new or expanded industrial uses for the products that a cooperative may have to market, or the facilities necessary to provide expanded services for the production supply needs of members. Or, some cooperatives may seek to study the possibility of increasing operating efficiency as well as determining membership needs and interests.

On this point, competent research directors not only may be able to provide the answers themselves, but they may also be able to advise management as to the extent to which assistance can be obtained from Federal agencies such as Farmer Cooperative Service (USDA), various departments of land-grant and other universities, and, in some instances, from the expertise that may be available through commercial research firms.

Staffing of a research department is a basic consideration if cooperatives are to develop effective research programs. Indications are that much progress has been made in selecting competent research personnel. Currently, a number of cooperative research directors have Ph.D. degrees in their respective fields and have demonstrated on-the-job competence in initiating and developing effective research programs. Some cooperatives report that an advanced degree is a requirement for employment as a professional in their research departments. It needs to be emphasized that research, like any other undertaking, requires not only highly trained individuals, but also individuals who, when on the job, have gained recognition for their accomplishments. Management should still keep the admonition of the National Resources Planning Board in mind. Years back, the board said, "The belief (is) that competency in

research is an innate capacity common to all intelligent people which flowers spontaneously upon bestowal of title."

One research director when stressing the need for professional training for the research worker emphasized this same point when he said "management. . . should also be made aware of the problems of trying to make researchers out of former line management personnel or former salesman.

The structure and organization of a research department is another matter that should receive careful consideration as cooperatives initiate a research program. For instance, should the research director report directly to the manager or should he report to an assistant manager or to a department head?

Research directors report that the status achieved by their research programs closely relates to the recognition and support that they receive from the manager and other key officials of the cooperative. The higher up the management hierarchy the research director reports, the greater status his department has in the cooperative. This, too, could assure the management of a greater degree of objectivity in the use of research. It usually is when the research director reports to the general manager or assistant general manager that management can most objectively use research to evaluate the effectiveness of some of the operating programs of various division and department heads. Some research directors, however, emphasized the importance of discussing such evaluations with the departments concerned before reporting to the general manager and staff. This avoids the element of surprise and enables the department head to most effectively explain and, if necessary, present his views on findings.

That most cooperative research directors report to high association officials is indicated by information provided by 44 of them. Nineteen of this group stated that they reported to the president or general manager. Another 10 reported to the executive or corporate vice president or assistant general manager. Nine reported to various vice presidents having responsibility for various operating functions, such as staff services, food processing marketing, sales, and operations. Two research directors reported to the director of production and marketing, and one to the director of sales planning. Only one reported to the board of directors.

More important than the specific niche the research function may occupy on an organization chart, however, is the environment in which the director functions. It is recognized that, depending on how effectively the research director works, he may be able to shape his

own environment once he is given a chance to prove his usefulness. Such an environment must reflect understanding, appreciation, and support. As one research director phrased it, it is important to "operate at the heartbeat of the cooperative." Experience has demonstrated that there is merit in developing a high degree of research awareness on the part of division directors and department heads, especially in large organizations. The research director may well be in a position to assist and advise them on research needed to help them on problems relating specifically to their operations.

STRENGTHENING ON-GOING RESEARCH PROGRAMS

In view of possible changes within the organizational structure of cooperatives, expansion of operations, and impacts of far-reaching changes in agriculture and in the economy, cooperatives need to continually reexamine the effectiveness of their research programs. Practical questions, for instance, relate to such matters as what changes will merger with another cooperative or a decision to provide new lines of services have on the way a research department should operate. Also, cooperatives may change their methods of operation as to bargaining practices, processing farm products, carrying products further through marketing channels, and adding feed mills and fertilizer plants.

A research department can be extremely helpful in identifying changes in agricultural conditions that are occurring in the operating territory of the cooperative and in suggesting beneficial adjustments to these changes. As cooperatives gain increased experience with research, they may want to change the emphasis they place on research. This is in line with the suggestion of one research director who emphasized "starting small" and growing as the department is able to demonstrate performance.

As a research department grows, it can broaden its scope of inquiry. For instance, in addition to business research on internal problems, increased emphasis may be given to external problems that will have an impact on the agriculture in which cooperatives operate. This may range from an evaluation of broad economic, social, and political conditions affecting an industry to evaluating the impacts of changes in national and international agricultural policies, including new legislation, regulatory provisions, taxation, and changing prospects for foreign trade. Any of these or other changes may have a pronounced bearing on the way in which a research department

might need to operate if the cooperative is to serve its members most effectively.

Coordinating Research Effort

As research departments gain in sophistication, cooperatives may want to give more consideration to opportunities for exploring joint research with other regionals, since they often have many problems in common with them. These can be dealt with in many ways. In other instances, an exchange of information between research departments can be mutually beneficial. In other instances, joint research by various regional cooperatives may prove advantageous. With greater research experience, cooperatives also will know how to coordinate their research efforts more effectively with those of land-grant colleges and agencies of the Federal Government such as Farmer Cooperative Service. Rather than being competitive, such efforts often can be coordinated to achieve greater use of research resources.

Closely related to coordination of research effort is the encouragement other interested groups give cooperatives to conduct internal research. National cooperative organizations such as the American Institute of Cooperation, the National Council of Farmer Cooperatives, the Cooperative League of the USA, National Milk Producers Federation, and National Rural Electric Cooperative Association, all recognize the role of research in a general way. Leadership in these agencies could give increased status to these efforts by emphasizing the contributions of internal research as a management tool for cooperative decision-makers at annual programs and in their member relationship activities.

Various cooperative training centers also are in a position to emphasize the importance of internal research by cooperatives. All experiment stations of land-grant colleges can give further impetus to this work. Those with special cooperative centers, such as universities of Wisconsin and Missouri, are in a uniquely strategic position to encourage such programs. Likewise, the multi-state efforts such as the tri-state (Alabama, Louisiana, and Mississippi) and the four-state (Florida, Georgia, and North and South Carolina) committees for cooperative research and education also can serve as a springboard for the encouragement and support of internal research by cooperatives. Since these committees are made up of representatives from experiment station and extension services of land-grant colleges, state

cooperative councils, and farm credit banks, they can be quite effective in encouraging the research programs of cooperatives.

Improving Day-to-Day Operations

Research directors also might want to carefully consider how their daily operations may be improved. They may find it desirable to establish priorities and through close working relationships with various operating departments, demonstrate that they deserve the support and encouragement of these departments. By doing this, it may be possible to increase operating effectiveness and to assure that resources are directed in the most advantageous manner.

Presenting Findings Effectively

Better presentation of findings can do much to improve the effectiveness of cooperative research departments. In communicating on this point one research director stated: "This is perhaps the key to long run success or failure of research departments." Procedures used vary all the way from giving informal verbal reports to the preparation of carefully documented publications that provide information relating to procedures, objectives, basic findings, and recommendations. One research director inserts a word of caution with the statement: "Far too often we try to be more sophisticated than is needed. We focus on the report rather than trying to honestly communicate results when they are needed."

General experience of research departments has demonstrated the advantage of written and graphic presentation. Often it may be desirable to prepare a good summary with charts for top management with a detailed report to support such a summary when needed. Such reports avoid disagreement as to specific recommendations and become a prominent source of reference material. This can do much to eliminate misunderstanding when policy decisions are made. Also, it can result in the preparation of better and more completely thought-out recommendations.

Cooperatives will need to decide how far they should go in making research reports available to different members of the management team. To what extent should the directors, as well as the manager and the employees, have reports? Another consideration relates to the extent that summaries should be prepared and to determining who should receive them.

The following points deserve the consideration of research directors in the presentation of research findings:

1. More effort should be given to the careful preparation of research reports, including development of objectives, decisions on techniques to use, development of conclusions and recommendations, and presentation of findings.

2. Some research reports could be exchanged to advantage with other cooperatives, and in some cases distributed to public agencies.

3. Research reports should be written with more emphasis on creating and holding the interest of various groups of readers—managers, department heads, directors, and members.

4. Research personnel should be encouraged to occasionally write for professional journals.

Identifying Responsibilities of Management and Research Directors

Effectiveness of an on-going research program to a large measure is likely to be determined by how well cooperative management and research directors assume responsibilities for an effective research program.

With respect to managers, the National Resources Planning Board some time back classified them into those who:

1. Give business research full acceptance.
2. Give research full recognition.
3. Pay lip service to the idea of research.

Quite obviously a research program reflects the managerial environment in which a research department finds itself. Any on-going research program will be more effective when the manager fully accepts it as an important management tool. I previously summarized the responsibilities of managers in maintaining an effective research program as follows:⁴

1. Selecting a director with proper training and experience.
2. Encouraging employment of competent assistants.
3. Furnishing needed facilities and funds.
4. Giving the department proper status within the association, and encouraging efforts of research personnel to gain professional recognition outside the cooperative.

⁴See p. 22 of reference cited in footnote 3.

5. Developing and maintaining a spirit of "research consciousness" among key association officials.

6. Building morale in the department by letting research channel its energies on main problems of policy determination; and, once findings are determined, permitting research personnel to participate in discussions relating to policy decisions.

If management assumes these responsibilities, it is in a position to demand performance. Maintaining an effective research program, however, is as much the responsibility of the research director as of the manager. Given a favorable environment within the cooperative, the research directors will determine by their performance, to a large degree, how effective research will be in guiding policy decisions of cooperatives.

In an earlier study, I mentioned the following points as important in contributing to the maintenance of an effective research program by regional cooperatives.⁵ They appear to have equal application at this time.

1. Selecting qualified assistants.

2. Encouraging the use of research and project committees, budgets, and proper facilities and equipment.

3. Maintaining high professional standards, both in caliber of work and in professional relationships with research workers in other cooperatives, and among Federal and State agencies.

4. Establishing research programs concerning major operating problems of associations.

5. Insisting on effective presentation of research findings.

6. Arranging working schedules for themselves and their assistants to allow sufficient leisure for considering association problems objectively.

Suggestions of Research Directors

Business research directors emphasized four things that would help them improve their research programs.

1. They reported the need for increased management recognition. This is in accordance with the idea that the general manager, through example and demonstration of respect for research, can do much to create a favorable environment for research. He can give increased status to the research function by involving the research

⁵*Op. Cit.* 2, p. 23. See p. 23 of reference cited in footnote 3.

director in planning sessions and staff discussions. He also can strengthen the research program by emphasizing to division and department heads that research is a function he supports and uses and that he expects them to do the same.

2. Better coordination and communication was the second way in which these research directors believed it would be possible to increase the effectiveness of research. Research problems need to be identified and the research undertaken at a time when findings can be useful to management in deciding on a course of action. When this is done, research becomes an integral part of any cooperative's kit of management tools.

3. Many business research directors indicated the need for increased staff. Of the 34 associations reporting research departments, 30 indicated the need for 362 additional employees if they were to provide the services desired. Eighty-seven, or 25 percent of these, were for business research departments, and 256, or 75 percent, were for technical research departments. This is necessary if they are to provide the specialization necessary to use statistics effectively and to conduct research in depth on a wide range of problems that can only be effectively dealt with by competent specialists. Especially important, in the opinion of research directors, was the need for more resources to enable them to be more effective in long-range planning and in determining market potentials.

4. Getting improved basic data for their analysis of problems was a fourth way to improve research according to business research directors. Some also emphasized the need for obtaining more timely information. Others stressed the need for better timing in getting data from farm panels. Directors reported the need for better basic statistical data bearing on specific problems confronting them.

Twenty-eight cooperatives offered a total of 57 suggestions to increase the effectiveness of their technical research programs. These were:

Ways to increase effectiveness	Cooperatives reporting
	<i>Number</i>
Better research management	14
Improved facilities	10
Increased coordination	8
More personnel	6
More funds	4
Better library facilities	2
Increased training	2
Miscellaneous	5

To a considerable extent, these suggestions paralleled those offered for improving business research. As would be expected, however, technical research included more emphasis on improved laboratory and library facilities. There was strong emphasis in both types of research for the need for better research management, greater coordination within the cooperatives, the need for increased research budgets, and more and better trained personnel.

COOPERATIVES CONDUCTING RESEARCH
July 1, 1972

Names	Formal research departments			Research in line departments	
	Business	Technical	Combined	Business	Technical
Agway, Inc.	X	X		X	X
Associated Milk Producers Association, Inc.				X	X
CALCOT, Ltd.	X				X
California & Hawaiian Sugar Refining Corporation, Ltd.	X	X			
California Beet Growers Association, Inc.				X	
California Cannery & Growers	X	X			
Capital Milk Producers Cooperative ...				X	X
Central Livestock Association				X	
Citrus Central, Inc.	X				
Citrus World, Inc.		X		X	
Consolidated Badger Cooperative		X			
C. T. Supply Company		X		X	
Dairylea Cooperative	X	X			
Dairymen, Inc.	X				
Diamond Walnut Growers, Inc.				X	X
FAR-MAR-CO, Inc.		X			
Farm Bureau Services, Inc.				X	X
Farmers Livestock Marketing Association					X
Farmers Union Central Exchange, Inc.	X				
Farmland Industries, Inc.	X	X			
FCX, Inc.	X			X	
FS Services, Inc.	X				X
Gold Kist, Inc.	X	X			
Indiana Farm Bureau Cooperative Association	X	X		X	X
Interstate Milk Producers Association	X			X	
Interstate Producers Livestock Association				X	X

COOPERATIVES CONDUCTING RESEARCH—Continued
July 1, 1972

Names	Formal research departments			Research in line departments	
	Business	Technical	Combined	Business	Technical
Landmark, Inc.	X			X	X
Land O'Lakes, Inc.	X	X		X	X
Lehigh Valley Cooperative Farmers		X			
McDonald Cooperative Dairy Co.	X	X			
Mid-America Dairymen, Inc.			X		X
Midland Cooperatives, Inc.					X
Milk, Inc.				X	
Mississippi Chemical Corporation			X	X	
MFC Services				X	
Missouri Farmers Association, Inc. ...	X			X	X
MFA Oil Company				X	X
National Cooperative Refinery Assn. ...				X	X
National Grape Cooperative Association, Inc.	X	X			
Norbest Turkey Growers.		X			
Northeast Dairy Cooperative Federation				X	X
North Pacific Cannery & Packers		X			
Ocean Spray Cranberry, Inc.	X	X		X	X
Pacific Supply Cooperative				X	X
Plains Cotton Cooperative Association				X	X
Producers Marketing Association				X	
Rice Growers Association of California		X		X	
Riceland Foods, Inc.					X
Southern States Cooperative, Inc. ...	X			X	X
Sunkist Growers, Inc.	X	X	X		
Sun-Maid Raisin Growers		X			
Texas Livestock Marketing Association.			X		
Total	21	23	4	28	23

OTHER PUBLICATIONS AVAILABLE

Cooperative Growth: Trends, Comparisons, Strategy. FCS Information 87

Business Research of Regional Farm Supply Co-ops. FCS General Report 13

Financial Profile of Farmer Cooperatives in the United States. Research Report 23

Statistics of Farmer Cooperatives 1969-1970. Research Report 22

Cooperative Bargaining Developments in the Dairy Industry, 1969-1970, with emphasis on the central U.S. Research Report 19

Handbook on 20 Major Regional Supply Cooperatives. Research Report 20

Integrated Petroleum Operations of Farmer Cooperatives, 1969. Research Report 21

Legal Phases of Farmer Cooperatives. Bulletin 10

Cottonseed and Soybean Processing Cooperatives. Information 75

Foreign Trade of Cooperatives. Information 88

A copy of these publications may be obtained from Farmer Cooperative Service U.S. Department of Agriculture, Room 1474 South Building, Washington, D.C. 20250.

Farmer Cooperative Service provides research, management, and educational assistance to cooperatives to strengthen the economic position of farmers and other rural residents. It works directly with cooperative leaders and Federal and State agencies to improve organization, leadership, and operation of cooperatives and to give guidance to further development.

The Service (1) helps farmers and other rural residents obtain supplies and services at lower cost and to get better prices for products they sell; (2) advises rural residents on developing existing resources through cooperative action to enhance rural living; (3) helps cooperatives improve services and operating efficiency; (4) informs members, directors, employees, and the public on how cooperatives work and benefit their members and their communities; and (5) encourages international cooperative programs.

The Service publishes research and educational materials and issues News for Farmer Cooperatives. All programs and activities are conducted on a nondiscriminatory basis, without regard to race, creed, color, sex, or national origin.